

Customer:

No.SW945497 A

ALPS ELECTRIC EUROPA GMBH

Date: Nov. 14 '94

Attention:

Your ref. No.: 15 1058

Your Part No.: STSSS2121

SPECIFICATIONS

ALPS'

STSSS2121 00

MODEL:

F.E.C. No. 733-568

Sample No.: F3711036M
SSSS21382A

RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

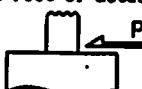
ALPS ELECTRIC CO., LTD.

DSG' D M. Kishi

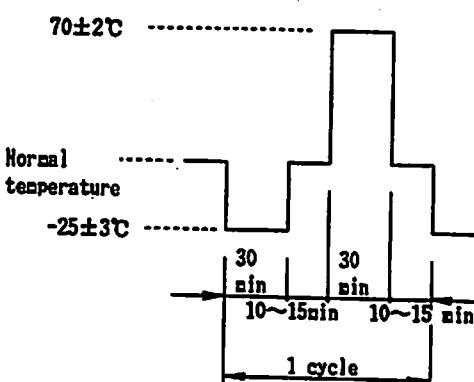
HEAD OFFICE
1-7, YUKIGAYA-OHTSUKA-CHO,
OHTA-KU, TOKYO 145 JAPAN

APP' D T. Maruyama
ENG. DEPT. DIVISION

Sales

SSSS2-S-801		PRODUCT SPECIFICATIONS						SSSS212									
								(S)									
1. General																	
1.1 Application This specification is applied to low current circuit (Secondary circuit) slide switch used for electronic equipment.																	
1.2 Operating temperature range : -10 ~ 60°C																	
1.3 Test conditions The standard test conditions shall be 5~35°C in temperature, 45~85% RH and 86~106kPa (860~1060mbar) in atmospheric pressure. Should any doubt arise in judgement, tests shall be conducted at 20±2°C, 65±5% RH and 86~106kPa (860~1060mbar).																	
2. Appearance, construction and dimensions																	
2.1 Appearance Switch shall have good finishing, and shall have no rust, crack or plating failures.																	
2.2 Construction and dimensions Per individual product drawing																	
2.3 Markings Per individual product drawing																	
3. Rating <u>6</u> V DC <u>0.3</u> A (Resistive load)																	
4. Electrical performance																	
Items	Test conditions						Criterion										
4.1 Contact resistance	Shall be measured at 1kHz±200Hz (20mV MAX, 50mA MAX) or 1A, 5V DC by voltage drop method.						<u>70</u> mΩ MAX										
4.2 Insulation resistance	Test voltage : <u>500</u> V DC, measured after 1 minute±5 seconds. Applied position : Between all terminals Between terminals and ground (frame)						<u>100</u> MΩ MIN										
4.3 Voltage proof	Test voltage : <u>500</u> V AC (50~60Hz, cut-off current 2 mA) Applied position : Between all terminals Between terminals and ground (frame)						No dielectric breakdown shall occur.										
4.4 Capacitance	Shall be measured at 1MHz ± 10kHz Between all terminals Between terminals and ground (frame) Between all circuits						<u>PF</u> MAX										
4.5 Changeover timing							As per individual product drawing.										
5. Mechanical performance																	
Items	Test conditions						Criterion										
5.1 Operating force	A static load shall be applied to the root of actuator in operating direction. 						As per individual product drawing.										
5.2 Terminal strength	A static load of <u>3 N (306 kgf)</u> shall be applied to the tip of terminal in a desired direction for 1 minute. The number of test shall be once per terminal.						Shall be free from terminal looseness and damage and breakage of terminal holding portion. Terminals may be bent after test, electrical performance requirement specified in item 4 shall be satisfied.										
5.3 Mounting strength of thread portion	Thread shall be mounted at <u>N·m (kgf·cm)</u> by normal mounting method.						Shall be free from damage of thread portion.										
5.4 Control strength	(1) A static load of <u>20 N (2.04 kgf)</u> shall be applied in the operating direction of actuator for 15 seconds. (2) A static load of <u>10 N (1.02 kgf)</u> shall be applied in the pull direction of actuator for 15 seconds. (3) A static load of <u>10 N (1.02 kgf)</u> shall be applied to the vertical direction of operation at the tip of actuator for 15 seconds.						Shall be free from pronounced wobble, bending and mechanical abnormalities.										
5.5 Wobble of actuator	Run-out (P-P) shall be measured by applying a static load of <u>1N (102gf)</u> in the vertical direction of operation at the tip of actuator.						P-P : <u>1</u> mm MAX										
5.6 Vibration	Switch shall be secured to a testing machine by a regular mounting device and method. (1) Vibration frequency range : 10~55Hz (2) Total amplitude : 1.5mm (3) Sweep ratio : 10-55-10(Hz) Approx. 1 minute (4) Method of changing the sweep vibration frequency : Logarithmic or linear (5) Direction of vibration : Three vertical directions including actuator. (6) Time : 2 hours each (6 hours in total)						Contact resistance (Item 4.1) : <u>70</u> mΩ MAX Insulation resistance (Item 4.2) : <u>100</u> MΩ MIN Voltage proof (Item 4.3) : Apply <u>500</u> V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within specified value. No abnormalities shall be recognized in appearance and construction.										
5.7 Mechanical shock	Switch shall be measured after following test. (1) Mounting method : Normal mounting method (2) Acceleration : <u>490m/s² (50G)</u> (3) Duration : <u>11ms</u> (4) Test direction : 6 directions (5) Number of shock : 3 times per direction (18 times in total)						Contact resistance (Item 4.1) : <u>70</u> mΩ MAX Operating force (Item 5.1) : Within specified value. Shall be free from mechanical abnormalities.										
		PAGE	SYMB	DATE	APPD	CHKD	DSGD	APPD. <u>M.</u>	CHKD. <u>S.</u>								
								Jun7-'93	TITLE								
								1mm	DRAWING NO.								
									(1/4)								

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Items	Test conditions						Criterion										
5.8 Solderability	<p>Switch shall be checked after following test.</p> <p>(1) Solder : H63A (JIS Z 3282)</p> <p>(2) Flux : Rosin flux (JIS K 5902) having a nominal composition of 25% solids by weight of water white rosin in methyl alcohol (JIS K 1501)solution.</p> <p>(3) Soldering temperature : $230 \pm 5^\circ\text{C}$ Immersing time : 3 ± 0.5 s Flux immersing time shall be 5~10 seconds in normal temperature</p> <p>(4) Immersion depth : Immersion depth shall be at copper plating portion for P.C.B. terminal after mounting. Thickness of P.C. board : 1.6 mm Immersion depth shall be at wiring portion of lead wire for lead wire terminal.</p>						More than 75% of immersed part shall be covered with solder. If frame is made of tin plate, cutting section shall not be applied.										
5.9 Soldering heat resistance	<p>Switch shall be measured after following test.</p> <p>(1) Solder : H63A (JIS Z 3282)</p> <p>(2) Flux : Rosin flux (JIS K 5902) having a nominal composition of 10% solids by weight of water white rosin in methyl alcohol (JIS K 1501)solution.</p> <p>(3) Temperature and immersing time</p> <table border="1"> <thead> <tr> <th></th> <th>Temperature (°C)</th> <th>Time (s)</th> </tr> </thead> <tbody> <tr> <td>Dip soldering</td> <td>260 ± 5</td> <td>5</td> </tr> <tr> <td>Manual soldering</td> <td>350 ± 10</td> <td>4 MAX</td> </tr> </tbody> </table> <p>(4) Immersion depth : Immersion depth shall be at copper plating portion for P.C.B. terminal after mounting. Thickness of P.C. board (Single sided copper clad P.C.B.) : 1.6mm</p>							Temperature (°C)	Time (s)	Dip soldering	260 ± 5	5	Manual soldering	350 ± 10	4 MAX	<p>No abnormalities shall be recognized in appearance. The electrical performance requirements specified in item 4 shall be satisfied.</p> <p>Soldering condition of each P.C. board thickness shall be according to paragraph 6 of precaution in use.</p>	
	Temperature (°C)	Time (s)															
Dip soldering	260 ± 5	5															
Manual soldering	350 ± 10	4 MAX															
6. Durability																	
Items	Test conditions						Criterion										
6.1 Operating life without load	Switch shall be operated 10,000 cycles at 15~20 cycles/minute without load.						<p>Contact resistance (Item 4.1) : <u>100 mΩ MAX</u></p> <p>Insulation resistance (Item 4.2) : <u>10 MΩ MIN</u> (Measured at 100V DC)</p> <p>Voltage proof (Item 4.3) : Apply <u>100 V AC</u> for 1 minute. No dielectric breakdown shall occur.</p> <p>Operating force (Item 5.1) : Within <u>±10 %</u> of specified value. No abnormalities shall be recognized in appearance and construction.</p>										
6.2 Operating life with load	Switch shall be operated 10,000 cycles at 15~20 cycles/minute with <u>6 V DC 0.3 A.</u> (Resistive load)						<p>Contact resistance (Item 4.1) : <u>130 mΩ MAX</u></p> <p>Insulation resistance (Item 4.2) : <u>10 MΩ MIN</u> (Measured at 100V DC)</p> <p>Voltage proof (Item 4.3) : Apply <u>100 V AC</u> for 1 minute. No dielectric breakdown shall occur.</p> <p>Operating force (Item 5.1) : Within <u>±10 %</u> of specified value. No abnormalities shall be recognized in appearance and construction.</p>										
7. Weather proof																	
Items	Test conditions						Criterion										
7.1 Cold proof	After testing at $-10 \pm 2^\circ\text{C}$ for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and then measurement shall be made within 1 hour. Water drops shall be removed.						<p>Contact resistance (Item 4.1) : <u>100 mΩ MAX</u></p> <p>Insulation resistance (Item 4.2) : <u>10 MΩ MIN</u></p> <p>Voltage proof (Item 4.3) : Apply <u>500 V AC</u> for 1 minute. No dielectric breakdown shall occur.</p> <p>Operating force (Item 5.1) : Within <u>±10 %</u> of specified value. No abnormalities shall be recognized in appearance and construction.</p>										
			APPD.	CHKD.	DSGD.	TITLE											
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Items		Test conditions			Criterion	
7.2	Dry heat	After testing at $65 \pm 2^\circ\text{C}$ for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and then measurement shall be made within 1 hour.			Contact resistance (Item 4.1) : <u>100 mΩ MAX</u> Insulation resistance (Item 4.2) : <u>10 MΩ MIN</u> Voltage proof (Item 4.3) : Apply <u>500 V AC</u> for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within <u>±10 %</u> of specified value. No abnormalities shall be recognized in appearance and construction.	
7.3	Damp heat	After testing at $40 \pm 2^\circ\text{C}$ and 90~95%RH for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be removed.			Contact resistance (Item 4.1) : <u>100 mΩ MAX</u> Insulation resistance (Item 4.2) : <u>10 MΩ MIN</u> Voltage proof (Item 4.3) : Apply <u>100 V AC</u> for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within <u>±10 %</u> of specified value. No abnormalities shall be recognized in appearance and construction.	
7.4	Salt mist	Switch shall be checked after following test. (1) Temperature : $35 \pm 2^\circ\text{C}$ (2) Salt solution : 5±1% (Solids by weight) (3) Duration : $24 \pm 1 \text{ h}$ After the test, salt deposit shall be removed in running water.			No remarkable corrosion shall be recognized in metal part.	
7.5	Temperature cycling	After 5 cycles of following conditions, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be removed.			Contact resistance (Item 4.1) : <u>100 mΩ MAX</u> Insulation resistance (Item 4.2) : <u>10 MΩ MIN</u> Voltage proof (Item 4.3) : Apply <u>100 V AC</u> for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within <u>±10 %</u> of specified value. No abnormalities shall be recognized in appearance and construction.	
7.6	Damp heat with load (Silver migration)	DC voltage 1.5 times as much as rated voltage shall be applied continuously between adjacent terminal at $60 \pm 2^\circ\text{C}$ and 90~95%RH. After 500 hours testing, switch shall be allowed to stand under normal temperature and humidity condition for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be removed.			Insulation resistance (50V DC) : <u>10 MΩ min.</u> Voltage proof : Apply 100V AC for 1 minute. No dielectric breakdown shall occur.	

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SSSS2-S-801

PRODUCT SPECIFICATIONS

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Precaution in use

1. Note that if the load is applied to the terminals during soldering they might suffer deformation and defects in electrical performance.
2. Use of water-soluble soldering flux shall be avoided because it may cause corrosion of the switch.
3. For series SSSS 212, operation may be heavy if the switch is used with a case fixed or 2 pcs in a line. When 2 pcs of switches are used in a line, please detach them 1 mm. at least.
4. For series SSSS 212, Knob horizontal type, soldering flux might be flowed in the switch in case of auto-dip soldering. Therefore manual soldering shall be available.
5. The knob of slider shall be moved to first contact or second contact completely when soldering.
6. The soldering condition of series SSSS shall be as follows. The deformation or defects in electrical performance might be occurred if the time or temperature exceed this specification.

• Auto-dip soldering

Temperature : $260 \pm 5^\circ\text{C}$, Time 5-1 sec.Thickness of P.C. board : 0.8, 1.0
1.2, 1.6

• Manual soldering

(Sec. max.)

Temperature Thickness of iron tip of P.C. board	260 ± 10	300 ± 10	350 ± 10
0.8	5	5	3
1.0	5	5	3
1.2	5	5	4
1.6	5	5	4

* Abnormal pressure shall not be applied to the terminal.

Notes) (1) P.C. board shall be single sided copper clad P.W.B.

(2) This test shall be performed up to twice.

After first test, temperature shall be back to normal.

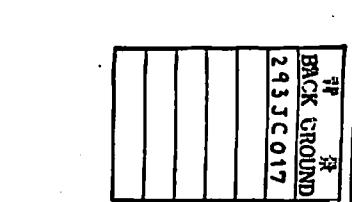
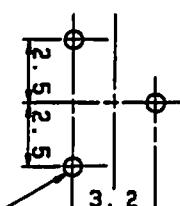
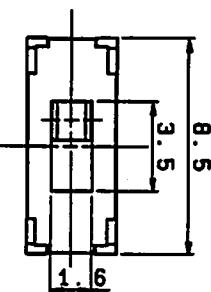
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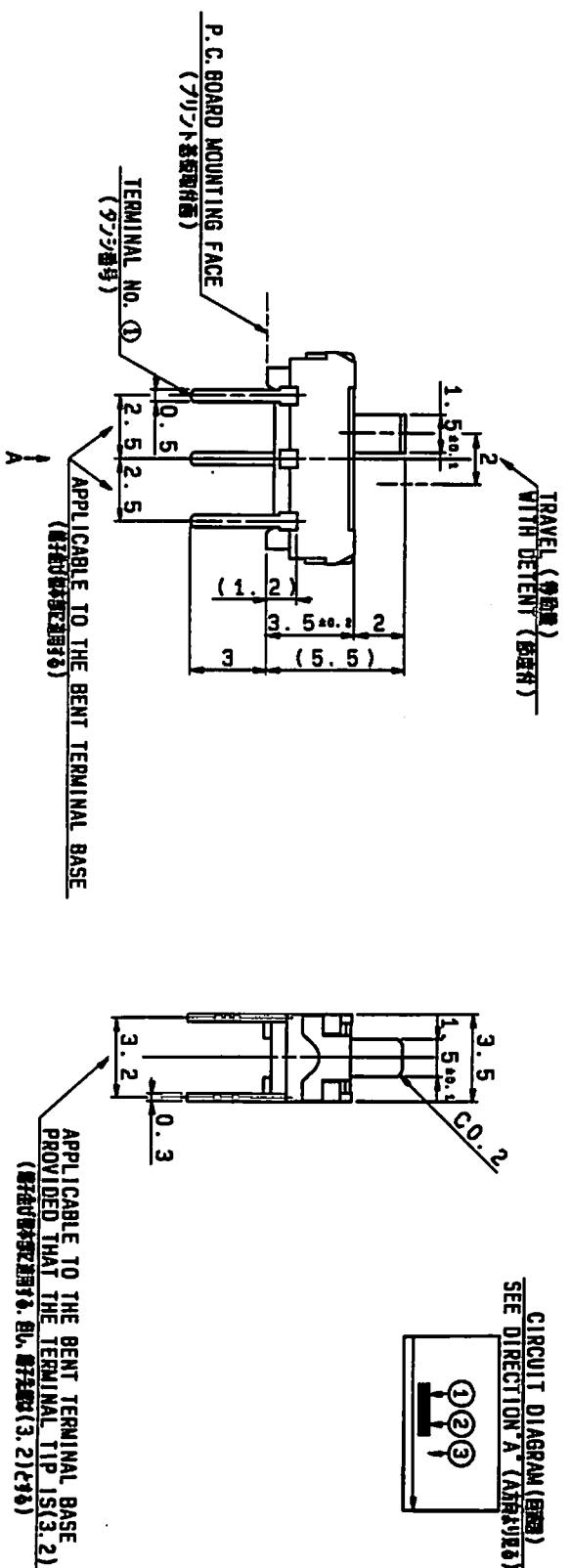
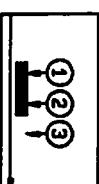
(4/4)

ALL TOLERANCES (±0.05) : ±0.05

BACK GROUND
293JC017



CIRCUIT DIAGRAM (回路図)
SEE DIRECTION 'A' (A方向参照)



3. OPERATING FORCE: 241.5N (2044153911)

(操作力)

(測定位置)
(底面)

(操作力)
(底面)

2. CHANGEOVER TIMING OF CONTACTS: NONSHORTING
(接点切替タイミング: ノンショーニング)

NOTES
1. PRODUCT SPECIFICATIONS NO. SSSS2-5-801
(規格)
(規格番号)

ALPS ELECTRIC CO., LTD.

TOLERANCES UNLESS OTHERWISE SPEC.	TOLERANCES	UNIT	SCALE	MODEL NO. (型番)	APP'D. CRD. (発行者)	DATE (日付)	TITLE (品名)	PRODUCT DRAWING (図面図)
BASIC DIMENSIONS		mm	1/2	SSSS21				
UP	70	±0.3						
ABOVE 10 TO 100	±0.5							
ABOVE 100	±0.8	mm	1/2	J.L. 23. '73	H. Y. H. I. T. M. F.	Dec. 27 '73	PRODUCT DRAWING (図面図)	document no. SSSS21382A
ANGULAR DIMENSIONS	±3°	ZONE SYMBOL	DATE	appd. char. no. Maruzuma K. is a Unzakid				